Abstract View

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Current Meter Observations on the Continental Slope at Two Sites in the Eastern Gulf of Mexico

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ABSTRACT

Current-meter observations obtained at two sites on the continental slope of the eastern Gulf of Mexico, at nominal positions of 29°N, 88°W (the Mobile site) and 27.5°N, 85.5°W (the Tampa site) are presented. Data were collected at three levels at Mobile (90,190 and 980 m) from July 1977 through August 1978 and at four levels at Tampa (150, 250, 550 and 950 m) from June 1978 through June 1979. At 90 and 190 m, the flow at Mobile was on the average to the east. Sustained periods of flow to the west were observed during the summer 1977 and spring 1978. During the periods of eastward flow, the wind was generally out of the north and during the periods of westward flow, the wind was out of the east. The flow at the top meter at Tampa was on the average to the west, in the same direction as the average wind. At both sites, the motions are perturbed by events associated with the Loop Current. These events make it difficult to define any seasonal variability in the upper layers. The flow at the bottom meters is strongly aligned with the bottom topography and lacks a strong seasonal signal. Little barotropic tidal energy was observed at either site. At both sites, maximum diurnal energy occurred near the local inertial frequency at the upper levels. These motions are probably induced by either cold-front passages or other atmospheric events. At the bottom meters, maximum diurnal-band energy occurred near the K_1-tidal constituent. These motions are strongly time-dependent and they may be related to internal tides.